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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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9629 7590 04/27/2009 MORGAN LEWIS & BOCKIUS LLP 1111 PENNSYLVANIA AVENUE NW WASHINGTON, DC 20004				
EXAMINER				
PIZIALI, JEFFREY J				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/608,187

**Applicant(s)**

BAEK ET AL.

**Examiner**

Jeff Piziali

**Art Unit**

2629

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 January 2009 and 22 September 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 4, 5, 7-9 and 12-14 is/are pending in the application.
- 4a) Of the above claim(s) 4, 5, 7-9 and 12-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 September 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-849)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 22 September 2008 has been entered.

***Priority***

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

***Drawings***

3. The drawings were received on 22 September 2008. These drawings are acceptable.
- The examiner presumes no substantive changes were made to the drawings other than the one described on page 2 of the 22 September 2008 amendment.
4. The drawings have not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the figures.

***Specification***

5. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

***Election/Restrictions***

6. ***Applicant's election of Invention I (claim 1)*** in the reply filed on *30 January 2009* is acknowledged and appreciated.

Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

7. ***Claims 9 and 12 are withdrawn*** from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on *30 January 2009*.

8. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

***Claim Rejections - 35 USC § 112***

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

11. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01.

An omitted structural cooperative relationship results from the claimed subject matter:

*"An electric field alignment method of a ferroelectric liquid crystal display device including a liquid crystal panel having a plurality of data lines, a plurality of gate lines and a plurality of thin film transistors arranged in a zigzag configuration between adjacent data lines of the data lines and having a ferroelectric liquid crystal material, comprising:"* (lines 1-5).

It would be unclear to one having ordinary skill in the art what earlier claimed element is intended to be the subject of **"comprising."**

For example: A *"method comprising"*? Or, a *"device comprising"*? Or rather, a *"panel comprising"*? Etc.

12. Claim 1 recites the limitation "***the data lines***" (line 18). There is insufficient antecedent basis for this limitation in the claim.

It would be unclear to one having ordinary skill in the art whether this limitation is intended to refer to the earlier claimed "*a plurality of data lines*" (line 2) and/or "*adjacent data lines*" (line 4).

13. Claim 1 provides for the use of a leakage current of the thin film transistors (line 25: "***using a leakage current of the thin film transistors***"), but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim 1 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

14. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite.

As a courtesy to the Applicant, the examiner has attempted to also make a rejection over prior art -- based on the examiner's best guess interpretations of the invention that the Applicant is intending to claim.

However, the indefinite nature of the claimed subject matter naturally hinders the Office's ability to search and examine the application.

Any instantly distinguishing features and subject matter that the Applicant considers to be absent from the cited prior art is more than likely a result of the indefinite nature of the claim.

The Applicant is respectfully requested to correct the indefinite nature of the claim, which should going forward result in a more precise search and examination.

***Claim Rejections - 35 USC § 102 / 103***

15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

17. Claim 1 is rejected under 35 U.S.C. 102(b) as anticipated by *Hasegawa et al (US 6,335,717 B1)*; or, in the alternative, under 35 U.S.C. 103(a) as obvious over *Hasegawa et al (US 6,335,717 B1)* in view of *Saishu et al (US 5,949,391 A)*.

Regarding Claim 1, *Hasegawa* discloses an electric field alignment method of a ferroelectric liquid crystal display device [*e.g., Fig. 2*] including

a liquid crystal panel [*e.g., Fig. 2: 10*] having

a plurality of data lines [*e.g., Fig. 3C: 23*],

a plurality of gate lines [*e.g., Fig. 3C: 24*] and

a plurality of thin film transistors [*e.g., Fig. 3C: 12*] arranged in a zigzag configuration between adjacent data lines of the data lines and having

a ferroelectric liquid crystal material [*e.g., Fig. 3B: 21*] (*e.g., see Column 7, Line 15 - Column 9, Line 4*), comprising:

supplying a gate voltage [*e.g., Fig. 4F:  $V_g$* ] at a level [*e.g.,  $V_{gh} = 20$  volts*] greater than a threshold voltage of the thin film transistors during an electric field alignment of the ferroelectric liquid crystal material to the plurality of gate lines,

the electric field alignment of the ferroelectric liquid crystal material is performed in a period [*e.g., Fig. 4A: Alignment Start Signal to Alignment Finish Signal*] that the ferroelectric liquid crystal material is transitioned from a nematic phase to a smectic phase, wherein

the gate voltage is supplied to the gate lines in a range of from ten to four-hundred times during the electric field alignment of the ferroelectric liquid crystal material (*e.g.,  $V_g$  operating at 60Hz for 1 second results in  $V_{gh}$  being supplied 60 times*); and

inverting a polarity [*e.g., Fig. 5: +2.5 volts, -2.5 volts*] of a data voltage [*e.g., Fig. 5:  $V_{sig}$* ] for the electric field alignment every time when the gate voltage is supplied to the gate lines [*e.g., Fig. 5:  $V_{sig}$  also operates at 60Hz at Sample No. 6*] and



supplying the inverted data voltage for the electric field alignment to the data lines, wherein

an electric field generated from the inverted data voltage is applied to the ferroelectric liquid crystal material by using a leakage current [*e.g., via feedthrough voltage*] of the thin film transistors (*see the entire document, including Column 10, Line 46 - Column 11, Line 41*).

Should it be shown *Hasegawa* teaches "zigzag configuration" subject matter with insufficient specificity:

*Saishu* discloses an electric field alignment method of a ferroelectric liquid crystal display device [*e.g., Fig. 1A*] including

a liquid crystal panel [*e.g., Fig. 1A: 10*] having

a plurality of data lines [*e.g., Fig. 2: 18, 20*],

a plurality of gate lines [*e.g., Fig. 2: 16, 17*] and

a plurality of thin film transistors [*e.g., Fig. 2: 12a, 12b*] arranged in a zigzag configuration between adjacent data lines of the data lines (*e.g., see Column 7, Lines 14-65*) and having

a ferroelectric liquid crystal material (*e.g., see Column 10, Lines 50-65*), comprising:

supplying a gate voltage at a level greater than a threshold voltage of the thin film transistors during an electric field alignment of the ferroelectric liquid crystal material to the plurality of gate lines,

the electric field alignment of the ferroelectric liquid crystal material is performed in a period that the ferroelectric liquid crystal material is transitioned from a nematic phase to a smectic phase (*e.g., see Column 1, Lines 20-32*), wherein

the gate voltage [*e.g., Fig. 5: +6 volts, -6 volts*] is supplied to the gate lines in a range of from ten to four-hundred times during the electric field alignment of the ferroelectric liquid crystal material (*e.g., 1H time is 32 microseconds*); and

inverting a polarity of a data voltage for the electric field alignment every time when the gate voltage is supplied to the gate lines (*e.g., see Column 10, Lines 50-65*) and

supplying the inverted data voltage for the electric field alignment to the data lines, wherein

an electric field generated from the inverted data voltage is applied to the ferroelectric liquid crystal material by using a leakage current of the thin film transistors (*see the entire document, including Column 10, Line 50 - Column 11, Line 57*).

**Hasegawa** and **Saishu** are analogous art, because they are from the shared inventive field of driving ferroelectric liquid crystal display devices.

Therefore, it would have been obvious to use **Saishu's** zigzag configuration with **Hasegawa's** electric field alignment method, so as to provide improved displayed images with high display contrast, no afterimage due to residual hysteresis, and no image sticking and flicker due to ununiform distribution of impurities (**Saishu: Column 2, Lines 50-58**), and/or so as to easily restore the liquid crystal alignment, even if the driving circuit and the like are mounted,

and can always display an image of high contrast and good quality (*Hasegawa: Column 3, Lines 33-37*).

***Response to Arguments***

18. Applicant's arguments filed 22 September 2008 have been fully considered but they are not persuasive.

Applicant's arguments with respect to claim 1 has been considered but are moot in view of the new ground(s) of rejection.

By such reasoning, rejection of the claims is deemed necessary, proper, and thereby maintained at this time.

***Conclusion***

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The documents listed on the attached '*Notice of References Cited*' are cited to further evidence the state of the art pertaining to electric field alignment methods.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Piziali whose telephone number is (571)272-7678. The examiner can normally be reached on Monday - Friday (6:30AM - 3PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chanh Nguyen can be reached on (571) 272-7772. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jeff Piziali/  
Primary Examiner, Art Unit 2629  
23 April 2009